Weekly Report

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Intro

This week I mainly focused on reviews of several latest multidimensional projection methods as well as active spectral clustering in order to find a new way of "active multidimensional projection".

Readings & Research

Several latest papers related to multidimensional projection are listed here:

- C. T. Silva, F. V. Paulovich, and L. G. Nonato, *User-Centered Multidimensional Projection Techniques*, Computing in Science & Engineering, vol. 14, no. 4, pp. 74-81, 2012. (a survey of modern multidimensional projection);
- F. V. Paulovich, L. G. Nonato, R. Minghim, and H. Levkowitz, *Least Square Projection: A Fast High-Precision Multidimensional Projection Technique and Its Application to Document Mapping*, IEEE Transactions on Visualization and Computer Graphics, vol. 14, no. 3, May 2008.;
- V. De Silva and J. B. Tenenbaum, *Sparse multidimensional scaling using landmark points*, Tech. Report, Dept. of Mathematics, Stanford University, 2004.

Including LAMP(InfoVis 2011) method for local MP(multidimensional projection), current MP methods should use all pairs of dissimilarities. In active spectral clustering[1], the author uses matrix perturbation theory to reduce the times of accessing dissimilarity matrix. The algorithm in [1] and its application in MP will be further discussed in the following weeks.

Practice & Skills

None.

Miscellaneous

None.

Plan for Next Week

- Continue research on adding active queries in MP methods;
- design some active learning scenarios for social network visualization.

References

[1] F. L. Wauthier, N. Jojic, and M. I. Jordan, *Active Spectral Clustering via Iterative Uncertainty Reduction*, presented at the KDD '12: Proceedings of the 18th ACM SIGKDD international conference on Knowledge discovery and data mining, 2012, pp. 1339-1347.